

CLAIMS

What is claimed is:

1. A method of data packet numbering in packet-switched data transmission in connection with a handover, in which responsibility for a connection is transferred from a connection between a mobile station and a first wireless telecommunication network to a connection between said mobile station and a second wireless telecommunication network, in which first wireless telecommunication network a data packet number space available for data packet numbering is bigger than a data packet number space of the second wireless telecommunication network, the method comprising the steps of:

restricting data packet numbering in the first wireless telecommunication network such that numbers of the data packets of the first wireless telecommunication network do not exceed a maximum value of the data packet number space of the second wireless telecommunication network.

2. A method as claimed in claim 1, wherein telecommunication protocols of said first and second wireless telecommunication networks comprise a convergence protocol layer (PDCP, SNDCP) for adapting user data packets to convergence protocol packets and a link layer (RLC, LLC) for transmitting the convergence protocol packets (PDCP-PDU) as data units (RLC-PDU) and for acknowledging the transmission.

3. A method as claimed in claim 1, further comprising the step of restricting a number of transmitted unacknowledged data packets to substantially 255 data packets (PDCP-PDU).

4. A method as claimed in claim 3, further comprising the step of restricting the number of unacknowledged data packets to be placed to a buffer on the convergence protocol layer to 255 data packets.

5. A method as claimed in claim 3, further comprising the step of restricting the number of unacknowledged data packets transmitted on a link layer to 255 data packets.

6. A method as claimed in claim 5, further comprising the step of restricting, in response to the number of unacknowledged data packets transmitted on the link layer substantially being 255, a size of a transmitting window of the data units to be transmitted on the link layer to be so small so as not to enable the transmission of a whole data packet.

7. A method as claimed in claim 2, further comprising the step of restricting a size of a transmitting window of a protocol layer of an application-level, such as a TCP layer, above the PDCP layer to be 255 data packets.

8. A method as claimed in claim 1, further comprising the step of restricting the data packet number space used in the packet-switched data transmission between said mobile station and said first wireless telecommunication network to correspond to the data packet number space of said second wireless telecommunication network.

9. A method as claimed in claim 8, further comprising the steps of utilizing a normal data packet number space in the packet-switched data transmission between said mobile station and said first wireless telecommunication network and

restricting the data packet number space used in the packet-switched data transmission between said mobile station and said first wireless telecommunication network to correspond to the data packet number space of said second wireless telecommunication network, in response to said telecommunication networks preparing for a handover.

10. A method as claimed in claim 4, further comprising the step of performing said restrictions in response to a definition of a strength of a received signal, which is performed in the data transmission between said telecommunication networks and a terminal, directing said telecommunication networks to prepare for a handover.

11. A method as claimed in claim 1, wherein the first telecommunication network comprises a UMTS network using a 16-bit data packet number space and the second telecommunication network comprises a GPRS network using an 8-bit data packet number space.

12. A telecommunication system comprising a mobile station and a first and a second wireless telecommunication network, which are arranged in a packet-switched data transmission to transfer a responsibility for a connection (handover) from a connection between said mobile station and said first wireless telecommunication network to a connection between said mobile station and said second wireless telecommunication network, in which first wireless telecommunication network a data packet number space available for data packet

numbering is bigger than a data packet number space of the second wireless telecommunication network, wherein

in the first wireless telecommunication network data packet numbering is arranged to be restricted such that numbers of the data packets of the first wireless telecommunication network do not exceed a maximum value of the data packet number space of the second wireless telecommunication network.

13. A telecommunication system as claimed in claim 12, wherein the telecommunication protocols of said first and second wireless telecommunication networks comprise a convergence protocol layer (PDCP, SNDCP) for adapting user data packets to convergence protocol packets and a link layer (RLC, LLC) for transmitting the convergence protocol packets (PDCP-PDU) as data units (RLC-PDU) and for acknowledging a transmission.

14. A telecommunication system as claimed in claim 12, wherein the number of transmitted unacknowledged data packets is arranged to be restricted to substantially 255 data packets (PDCP-PDU).

15. A telecommunication system as claimed in claim 14, wherein the number of unacknowledged data packets to be placed to a buffer in the convergence protocol layer is arranged to be restricted to 255 data packets.

16. A telecommunication system as claimed in claim 14, wherein the number of unacknowledged data packets transmitted on a link layer is arranged to be restricted to 255 data packets.

17. A telecommunication system as claimed in claim 16, wherein
in response to the number of unacknowledged data packets transmitted on
the link layer substantially being 255, the size of a transmitting window of data
units to be transmitted on the link layer is arranged to be restricted to be so small
so as not to enable the transmission of a whole data packet.

18. A telecommunication system as claimed in claim 13, wherein
the size of a transmitting window of a protocol layer of an application-
level, such as a TCP layer, above a PDCP layer is restricted to be 255 data
packets.

19. A telecommunication system as claimed in claim 12, wherein
the data packet number space used in the packet-switched data
transmission between said mobile station and said first wireless telecommunication
network is arranged to be restricted to correspond to the data packet number
space of said second wireless telecommunication network.

20. A telecommunication system as claimed in claim 19, wherein
a normal data packet number space is arranged to be utilized in the packet-
switched data transmission between said mobile station and said first wireless
telecommunication network and

the data packet number space used in the packet-switched data
transmission between said mobile station and said first wireless telecommunication
network is arranged to be restricted to correspond to the data packet number
space of said second wireless telecommunication network, in response to said
telecommunication networks preparing for a handover.

21. A telecommunication system as claimed in claim 15, wherein
said restrictions are arranged to be performed in response to a definition of
a strength of a received signal, which is performed in the data transmission
between said telecommunication networks and said terminal, directing said
telecommunication networks to prepare for a handover.

22. A telecommunication system as claimed in claim 12, wherein
the first telecommunication network is a UMTS network using a 16-bit
data packet number space and the second telecommunication network is a GPRS
network using an 8-bit data packet number space.